REMARKS

The application has been reviewed in light of the Office Action dated January 18, 2007. Claims 1-10 were pending. By this Amendment, claims 1-10 have been canceled, without prejudice or disclaimer, and new claims 11-20 have been added. Accordingly, claims 11-20 are presented now pending, with claim 11 being the sole pending claim in independent form.

Claims 1-10 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by JP 20002-03016 (Shinji '016).

Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claim 11 is patentable over the cited art, for at least the following reasons.

This application relates to drive control for a liquid discharge head that can be used for inkjet printing. In particular, applicant devised improvements to a liquid discharge head that enables the liquid discharge head to have a high nozzle density at a low cost. The liquid-discharge head comprises an electrostatic actuator which includes a nozzle discharging a liquid drop, a discharge room communicating with the nozzle, a diaphragm having a first electrode forming a wall surface of the discharge room, and a second electrode opposing the first electrode, with the diaphragm being deformed by generating an electrostatic force between the first electrode and the second electrode. An improvement devised by applicant includes providing a first separate electrode and a second separate electrode in the liquid-discharge head wherein the first separate electrode is provided in a vicinity of the first electrode which contacts a portion of the second electrode when the diaphragm is deformed, the first separate electrode being electrically isolated from the first electrode, and the second separate electrode provided in

a vicinity of the second electrode which contacts a portion of the first electrode when the diaphragm is deformed, the second separate electrode being electrically isolated from the second electrode. Independent claim 11 addresses these features.

Such features are discussed in the application, for example, at page 17, line 15 through page 21, line 20, and in Figs. 6-8. For example, in the embodiment of Fig. 8, the first and second separate electrodes 33 and 38 in the contact areas where the insulating layer 31 (a portion of the first electrode 30) and the insulating layer 37 (a portion of the second electrode 34, 35) are brought in contact with each other every time the diaphragm 30 is deformed make it possible to prevent damaging of the insulting layers 31 and 37 due to such mechanical contact during operation of the liquid-discharge head. Thus, the liquid-discharge head of claim 11 can reliably be driven with low voltage.

Shinji '016, as understood by Applicant, proposes a head driving circuit for an inkjet head, comprising driver circuits 71 and 72 for an actuator having a first electrode (diaphragm) 46 corresponding to a nozzle hole and a second electrode 50, wherein the circuit 71 is supplied with a power source voltage -Vcc and connected at the other terminal to ground to give a predetermined potential to the first electrode 46 of the actuator in response to print data, and the circuit 72 is supplied with a power source voltage +Vcc and connected at the other terminal to ground to give a predetermined potential to the second electrode 50 of the actuator in response to the print data.

Applicant does not find teaching or suggestion in the cited art, however, of a liquid discharge head comprising an electrostatic actuator which includes a nozzle discharging a liquid drop, a discharge room communicating with the nozzle, a diaphragm having a first electrode

forming a wall surface of the discharge room, and a second electrode opposing the first electrode, with the diaphragm being deformed by generating an electrostatic force between the first electrode and the second electrode, and further including a first separate electrode and a second separate electrode, wherein the first separate electrode is provided in a vicinity of the first electrode which contacts a portion of the second electrode when the diaphragm is deformed, the first separate electrode being electrically isolated from the first electrode, and the second separate electrode provided in a vicinity of the second electrode which contacts a portion of the first electrode when the diaphragm is deformed, the second separate electrode being electrically isolated from the second electrode, as provided by present claim 11 of this application.

In view of the remarks hereinabove, Applicant submits that the application is now in condition for allowance, and earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Patent Office is hereby authorized to charge any fees that are required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,

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